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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CH920010053/CB		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/08210	International filing date (day/month/year) 26.06.2003	Priority date (day/month/year) 12.09.2002	
International Patent Classification (IPC) or both national classification and IPC H04L29/06			
Applicant INTERNATIONAL BUSINESS MACHINES CORPORATION et al			
<p>1. This International preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 13.01.2004		Date of completion of this report 24.06.2004	
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Bertolissi, E Telephone No. +49 89 2399-6959 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/08210**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-24 as originally filed

Claims, Numbers

1-10 as originally filed

Drawings, Sheets

1/12-12/12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 1-10

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 6-10 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

☒ the claims, or said claims Nos. 1-5 are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

EXAMINATION REPORT - SEPARATE SHEET

Cited documents

The following documents have been considered for the purposes of this report:

- D1: WO 01 86433 A (SOLIDUM SYSTEMS CORP ;WELFELD FELIKS J (CA))
15 November 2001 (2001-11-15)
- D2: ICHIRIU M: 'HIGH PERFORMANCE LAYER 3 FORWARDING. THE NEED FOR DEDICATED HARDWARE SOLUTIONS' INTERNET CITATION, 2000, XP002155851 Retrieved from the Internet:
<URL:http://www.netlogicmicro.com/pdf/CIDR_white_paper.pdf> [retrieved on 2000-12-19]
- D3: DEVADAS S ET AL: 'Decomposition and factorization of sequential finite state machines' COMPUTER-AIDED DESIGN, 1988. ICCAD-88. DIGEST OF TECHNICAL PAPERS., IEEE INTERNATIONAL CONFERENCE ON SANTA CLARA, CA, USA 7-10 NOV. 1988, WASHINGTON, DC, USA, IEEE COMPUT. SOC. PR, US, 7 November 1988 (1988-11-07), pages 148-151, XP010013339 ISBN: 0-8186-0869-2
- D4: VAN LUNTEREN J ET AL: 'Multi-field packet classification using ternary CAM' ELECTRONICS LETTERS, 3 JAN. 2002, IEE, UK, vol. 38, no. 1, pages 21-23, XP002261672 ISSN: 0013-5194

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

- 1 The present application contains 10 claims, including 8 independent claims, 3 claims of the category "apparatus", namely 8-10, and 5 claims of the category "method", namely 1, 4, 5-7.

The various definitions of the "apparatus" and "method" category of claims are such that the claims as a whole are not clear and concise, contrary to the requirements of Article 6 PCT.

The claims, therefore, do not meet the requirements of Article 6 fully, since the multiplicity of independent claims, and the variety of the claimed subject-matter introduce obscurities into the exact definition of the matter for which protection is really sought and the independent claims are clearly not "reasonable" in number.

EXAMINATION REPORT - SEPARATE SHEET

- 1.1 With respect to the required conciseness, it would have been appropriate in this case to define the claimed subject-matter in **only one independent claim in each category**.

All independent claims should have then clearly designated the exact subject-matter for which protection was sought with all the features being essential for the whole exploitation of the invention.

- 2 Claims 1-5 are not supported by the description, as their scope is broader than justified by the description and the drawings, which leads to lack of clarity as required by Article 6 PCT and insufficient disclosure as required by Article 5 PCT. The reason is that the object of the invention is to perform packet processing (description page 5, lines 22-25), whereas claims 1-5 have no reference to handling packets whatsoever.
- 3 The term "resulting address" used in claim 1 is not clear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). It is not clear whether the resulting address is an IP address, a web address, or a memory address. Moreover It is not clear where this resulting address is located in the data structure which appears to be just composed by a table. The term should have been replaced by a more precise wording **found elsewhere in the original disclosure** (PCT Guidelines Chapter III-4.5).
- 3.1 The wording "reducing the number of entries" used in claim 1 is vague and unclear and leaves the reader in doubt as to how to perform this reduction of the number of rules entries, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). The claim should have been modified to include clearly all of the essential features needed to define the invention by using precise wording **found in the original disclosure** (PCT Guidelines Chapter III-4.4).
- 3.2 The terms "first binary value" and "second binary value" used in claim 2 are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). It is not clear what is the value of these bits.

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The terms should have been replaced by a more precise wording **found** elsewhere **in the original disclosure** (PCT Guidelines Chapter III-4.5).

Moreover claim 2 introduces a "base address pointer", but SP1 and SP2 (in brackets) appear to be 2 addresses.

- 3.3 In claim 4 it is not clear how the initialization step is carried out (Article 6 PCT). It is not clear what happens when the state is the final state, and how the new values are extracted if the state is not final.
- 3.4 The expression "may" as used in claim 5, introduces ambiguity, because the features directly following this expression are considered to be optional and it is therefore not clear whether they belong to the scope of the claim or not (Article 6 PCT; PCT Guidelines Chapter III 4.6).
- 3.5 The wording "repeating alternatively the steps of the method of claim 4 and the steps of the method of claim 5" used in claim 6 is unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). It is not clear how the method steps of claim 5 and 6 should be combined since there are overlapping steps. The claim should have been redrafted in order to clearly specify which and in which order the method steps of claim 5 and 6 are performed.

A similar objection is valid for claim 7 where it not clear what is meant with "combining in an order corresponding to the deep packet processing the steps of the method claim 4 with the set of steps of the method claim 5".

- 3.6 Article 6 in combination with Rule 6.3 PCT requires, that all the claims shall define the matter for which protection is sought in terms of **all the essential features** of the invention (PCT Guidelines Chapter III-4.4). This is not the case for claim 8 since the sole indication that the claimed apparatus is "for implementing the steps of the method according to anyone of claims 1-7" can be constructed as meaning merely "suitable for implementing the method ..." (PCT Guidelines Chapter III-4.8) and can not dispense the applicant from specifying expressly the features of the apparatus.

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- 3.7 Claim 9 claims a chip, thus an apparatus, which contains all the features of apparatus claim 8 and therefore should have been made dependent from claim 8.
- 3.8 A "computer program product", as claimed in claim 10, may only be claimed if it defines all the features which assure patentability of the process which the program is intended to carry out when it is run.

The use of the following wording would have overcome the objection raised:

"A computer readable medium storing instructions that when executed by a computer cause the computer to perform each of the method steps of claim <number of the method claim>."

Certain defects in the international application

- 4 To meet the requirements of Rule 6.3(b) PCT, the independent claims should have been properly cast in the two-part form, with those features which in combination are part of the prior art, being placed in the preamble.
- 5 Reference signs in parentheses should have been inserted in the claims to increase their intelligibility, Rule 6.2(b) PCT. This applies to both the preamble and characterising portion.
- 6 In order to fulfil the requirements of Rule 5.1(a)(iii) PCT, the description should have been brought into conformity with the new claims.